WHAT IS CLAIMED IS:

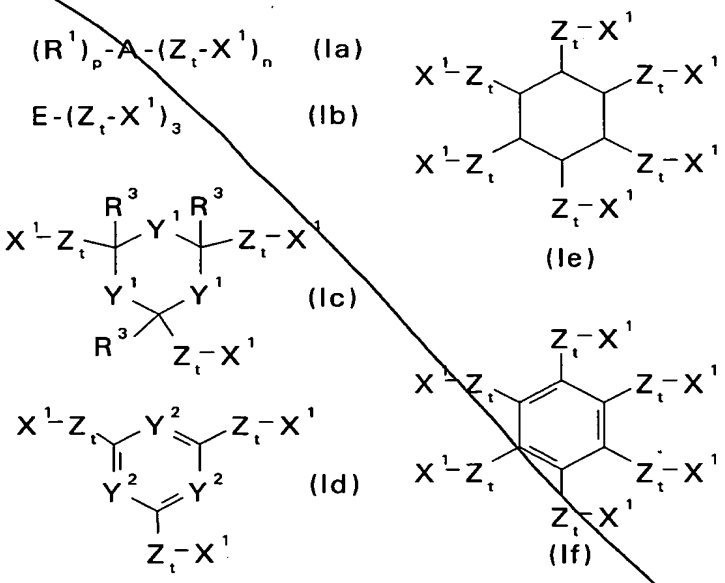
1. A liquid phase carrier (LPC) of formula $Sp(X^1)_n$, wherein: Sp is a polyvalent group that has more than two points of attachment, n is the number of points of attachment in Sp and X^1 is a reactive group for syntheis of biopolymers.

2. The LPC of claim 1, wherein: Sp is a symmetrical group such that all X^1 groups are equivalent.

3. The LPC of claim 1, wherein n is 3-6.

4. The LPC of claim 1, wherein: X^1 is OH, SH, NH_2, COR^5 or $COOR^4$, where R^4 is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R^5 is halide, heteroaryl or pseudohalide.

5. The LPC of claim 1 that has formulae (I):



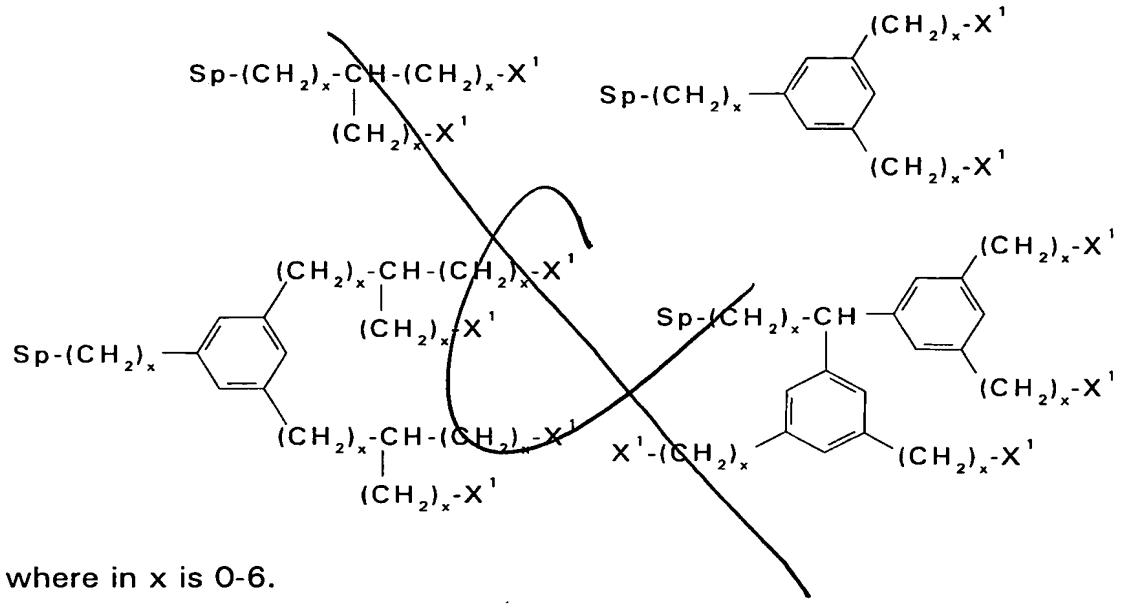
wherein: A is carbon or silicon; E is nitrogen or P(O); R^1 and R^3 are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl or heterocyclylalkyl; p is 0 or 1; Z is any combination of 1-12 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene units, which units may be combined in any order, with the proviso that if the LPC is of formula (Ia) or (Ib), then Z contains at least two phenylene or methylene

units; t is 1; X^1 is any reactive group which can be used in biopolymer synthesis; n is 3 or 4; Y^1 is CH_2, NH, S or O; Y^2 is selected from CH and N; R^1, R^3, X^1, Y^1, Y^2 and Z are unsubstituted or substituted with one or more substituents each independently selected from Q; and Q is halogen, hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryloxycarbonyl, aryloxycarbonylalkyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl, diarylaminocarbonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyloxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino, arylamino, diarylamino, alkylarylamino, alkylcarbonylamino, alkoxycarbonylamino, arylcarbonylamino, aryloxycarbonylamino, azido, alkylthio, arylthio, perfluoroalkylthio, thiocyano, isothiocyano, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, arylaminosulfonyl or diarylaminosulfonyl.

6. The LPC of claim 5, wherein: X^1 is OH, SH, NH_2, COR^5 or $COOR^4$, where R^4 is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R^5 is halide, heteroaryl or pseudohalide.

7. The LPC of claim 5, wherein Z is a group with three or more points of attachment: one to A, E, or the cyclic nucleus, and the others to two or more X^1 groups.

~~8. The LPC of claim 1, wherein the LPC has any of formulae:~~



where in x is 0-6.

9. The LPC of claim 5, wherein: A is carbon and E is nitrogen.

10. The LPC of claim 5, wherein the LPC has formulae (IIa) or (IIb):

$$(R^1)_p\text{-}C\text{-}(Z_t\text{-}X^1)_n \quad \text{(IIa)}$$

$$N\text{-}(Z_t\text{-}X^1)_3 \quad \text{(IIb)}$$

11. The LPC of claim 10, wherein p is 0 and n is 4.

12. The LPC of claim 11, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.

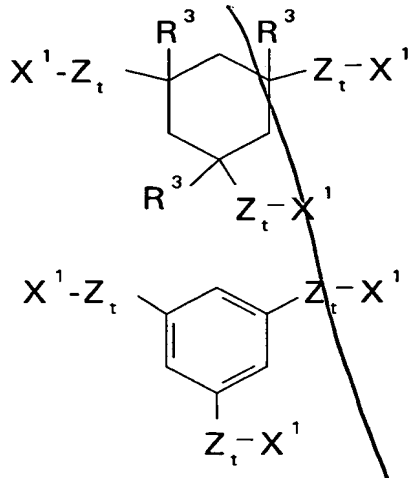
13. The LPC of claim 10, wherein Z is C_{1-12} alkylene.

14. The LPC of claim 10, wherein X^1 is OH, SH or NH_2.

15. The LPC of claim 14, wherein X^1 is OH.

16. The LPC of claim 14, wherein X^1 is NH_2.

17. The LPC of claim 5, wherein the LPC has formulae (IIc) or (IId):



(IIc)

(IId).

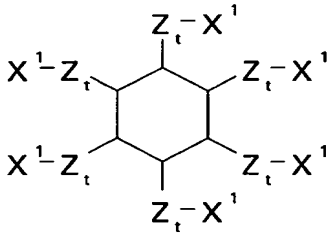
18. The LPC of claim 17, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.

19. The LPC of claim 17, wherein Z is C_{1-12} alkylene.

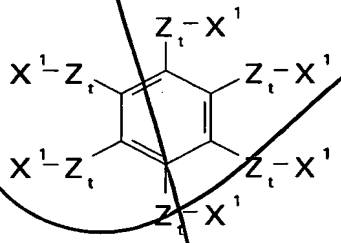
20. The LPC of claim 17, wherein X^1 is COR^5 or $COOR^4$.

21. The LPC of claim 17, wherein X^1 is $COOR^4$.

22. The LPC of claim 5, wherein the LPC has formulae (Ie) or (If):



(Ie)



(If)

23. The LPC of claim 22, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.

24. The LPC of claim 22, wherein Z is C_{1-12} alkylene.

25. The LPC of claim 22, wherein X^1 is COR^5 or $COOR^4$.

26. The LPC of claim 25, wherein X^1 is $COOR^4$.

27. The LPC of claim 1, wherein the LPC has formula $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH_2)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH_2)_n$, $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH_2)_n$, $Sp(C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}O\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}O\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}O\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}O\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}S\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}S\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}S\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}S\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}CO\text{-}O\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}CO\text{-}O\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}CO\text{-}S\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}CO\text{-}S\text{-}(CH_2)_x\text{-}SH)_n$, $Sp(C(O)\text{-}O\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(C(O)\text{-}S\text{-}(CH_2)_x\text{-}OH)_n$, $Sp(C(O)\text{-}O\text{-}(CH_2)_x\text{-}SH)_n$ or $Sp(C(O)\text{-}S\text{-}(CH_2)_x\text{-}SH)_n$ where x is 0-6.

28. The LPC of claim 27, wherein x is 2.

29. The LPC of claim 1 that is coupled to a photocleavable linker.

30. The LPC of claim 1 selected from the group consisting of $Sp(O\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(S\text{-}(CH_2)_2\text{-}C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, $Sp(NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$ and $Sp(C(O)\text{-}NH\text{-}(CH_2)_x\text{-}NH\text{-}C(O)\text{-}(CH_2)_x\text{-}COOH)_n$, where x is 0-6.

31. The LPC of claim 1, selected from the group consisting of tetrakis(8-amino-6-aza-2-oxa-5-oxooctyl)methane, tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(2-aminoethyl)amide, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-2-oxa-5,10,13-trioxotridecyl}methane ($(DMT\text{-}dT)_4$-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenyl-methyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ($(DMT\text{-}dT)_3$-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT_4-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-

trioxononyl]-benzene (dT_3-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ($(DMT\text{-}dT)_3$-Amine-LPC) and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT_3-Amine-LPC).

32. The LPC of claim 1 selected from the group consisting of tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-2-oxa-5,10,13-trioxotridecyl}methane ($(DMT\text{-}dT)_4$-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenyl-methyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ($(DMT\text{-}dT)_3$-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT_4-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ($(DMT\text{-}dT)_3$-Amine-LPC) and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT_3-Amine-LPC).

33. A method of solution phase biopolymer synthesis, comprising the steps of:

(a) reacting an LPC of formula $Sp(X^1)_n$ with a first monomer N^1;

(b) separating and purifying the product of step (a) to afford a compound of formula $Sp(X^1\text{-}N^1)_n$;

(c) reacting the product of step (b) with a second monomer N^2, a dimer $N^2\text{-}N^3$ or a trimer $N^2\text{-}N^3\text{-}N^4$; and

(d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula $Sp(X^1\text{-}N^1\text{-}N^2\text{-}\ldots\text{-}N^m)_n$, where m is 3 to 100, wherein:

Sp is a polyvalent group that has more than two points of attachment, n corresponds to the number of points of attachment in Sp and X^1 is a reactive group for biopolymer synthesis;

N^1, N^2, $N^3 \ldots N^m$ are biopolymer monomers; and

~~the dimers and trimers comprise the monomers.~~

34. The method of claim 33, wherein the biopolymer is an oligonucleotide, peptide, peptide nucleic acid (PNA) or oligosaccharide.

35. The method of claim 33, further comprising the step of:

(e) cleaving the biopolymer from the LPC.

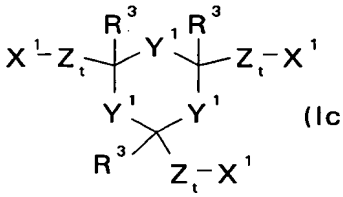
36. The method of claim 33, wherein the biopolymer is an oligonucleotide.

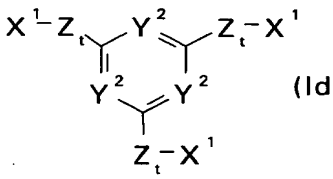
~~37. The method of claim 33, wherein n is 3-6.~~

38. The method of claim 33, wherein the LPC has formulae (I):

$(R^1)_p$-A-$(Z_t$-$X^1)_n$ (Ia)

E-$(Z_t$-$X^1)_3$ (Ib)


(Ic)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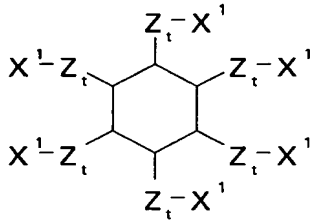
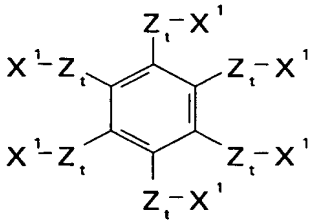

(Ie)


(If)

wherein: A is carbon or silicon; E is nitrogen or P(O); R^1 and R^3 are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl or heterocyclylalkyl; p is 0 or 1; Z is any combination of 0-12 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene, which units may be combined in any order; t is 0 or 1; X^1 is any reactive group which can be used in biopolymer synthesis; n is 3 or 4; Y^1 is CH_2, NH, S or O; Y^2 is selected from CH and N; R^1, R^3, X^1, Y^1, Y^2 and Z are unsubstituted or substituted with one or more substituents each independently selected from Q; and Q is halogen, hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl

containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryloxycarbonyl, aryloxycarbonylalkyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl, diarylaminocarbonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyloxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino, arylamino, diarylamino, alkylarylamino, alkylcarbonylamino, alkoxycarbonylamino, arylcarbonylamino, aryloxycarbonylamino, azido, alkylthio, arylthio, perfluoroalkylthio, thiocyano, isothiocyano, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, arylaminosulfonyl or diarylaminosulfonyl.

39. The method of claim 38, wherein X^1 is OH, SH, NH_2, COR^5 or $COOR^4$, where R^4 is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R^5 is halide, heteroaryl or pseudohalide.

40. The method of claim 33, wherein the LPC is selected from the group consisting of tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-2-oxa-5,10,13-trioxotridecyl}methane ((DMT-$dT)_4$-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ((DMT-$dT)_3$-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT_4-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ((DMT-$dT)_3$-Amine-LPC) and tris[3-

aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT_3-Amine-LPC).

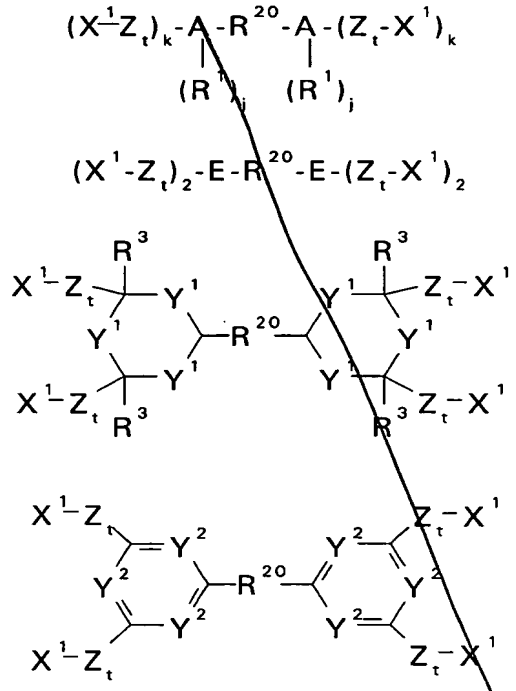
41. The method of claim 33, wherein the LPC is selected from tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT_4-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC), and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT_3-Amine-LPC).

42. The method of claim 33, wherein the LPC is 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC).

43. The LPC of claim 1 selected from the group consisting of tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT_4-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC), and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT_3-Amine-LPC).

44. The LPC of claim 1 that is 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT_3-Aryl-LPC).

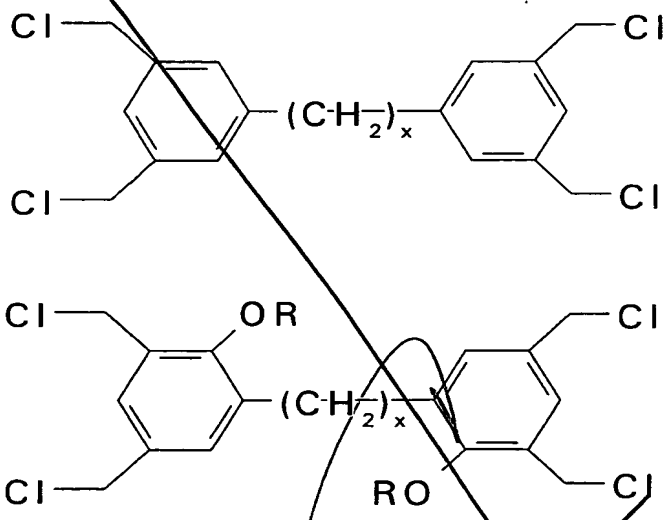
45. The LPC of claim 1 that has formulae:



wherein: A is carbon or silicon; E is nitrogen or P(O); R^1 and R^3 are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl or heterocyclylalkyl; Z is any combination of 1-12 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene, which units may be combined in any order, with the proviso that if the LPC is of formula (Ia) or (Ib), then Z contains at least two phenylene or methylene units; t is 0 or 1; X^1 is any reactive group which can be used in biopolymer synthesis; Y^1 is CH_2, NH, S or O; Y^2 is selected from CH and N; R^1, R^3, X^1, Y^1, Y^2 and Z are unsubstituted or substituted with one or more substituents each independently selected from Q; and Q is halogen, hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryloxycarbonyl, aryloxycarbonylalkyl, aminocarbonyl, alkyl-

aminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl, diarylaminocarbonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyloxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino, arylamino, diarylamino, alkylarylamino, alkylcarbonylamino, alkoxycarbonylamino, arylcarbonylamino, aryloxycarbonylamino, azido, alkylthio, arylthio, perfluoroalkylthio, thiocyano, isothiocyano, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, arylaminosulfonyl or diarylaminosulfonyl; R^{20} is alkylene, alkenylene, alkynylene, arylene or heteroarylene; k is 2 or 3; and j is 0 or 1.

46. The LPC of claim 45, wherein the compound has the formulae:



wherein x is 0-6 and R is lower alkyl.

47. The method of claim 33, wherein the monomers are nucleotides, nucleosides, natural or unnatural amino acids, protein nucleic acid (PNA) monomers or monosaccharides.

48. A method of solution phase biopolymer synthesis, comprising the steps of:

(a) reacting an LPC of formula $Sp(X^1)_n$ with a first monomer N^1;

(b) separating and purifying the product of step (a) to afford a compound of formula $Sp(X^1\text{-}N^1)_n$;

(c) reacting the product of step (b) with a second monomer N^2, a dimer $N^2\text{-}N^3$ or a trimer $N^2\text{-}N^3\text{-}N^4$; and

(d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula $Sp(X^1\text{-}N^1\text{-}N^2\text{-}...\text{-}N^m)_n$, where m is 3 to 100, wherein:

Sp is a polyvalent group that has two or more points of attachment, n corresponds to the number of points of attachment in Sp and X^1 is a reactive group for biopolymer synthesis;

N^1, N^2, N^3...N^m are biopolymer monomers;

the dimers and trimers comprise the monomers; and

the protocol used in steps (c) and (d) to synthesize the biopolymer, preferably the oligonucleotide, is the phosphoramidite protocol.

~~49. The LPC of claim 1 coupled to a biopolymer.~~

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